

3

and/or the outer panel **14** in any suitable location and in any suitable manner as described in more detail below. For example, in the embodiment shown in FIG. **3**, the adhesive **18** may be spaced apart from at least one end of the outer panel **14**.

Referring to FIG. **2**, a flowchart of a method for making a body panel assembly is shown. For convenience, a graphical representation of the flowchart steps is shown in FIGS. **3-7**. One of ordinary skill in the art will recognize that FIGS. **3-7** are merely exemplary and may be embodied in various and alternative forms.

For clarity, the flowchart in FIG. **2** does not include the shaping and/or forming operations associated with fabricating the inner and outer panels **12,14** since such operations were previously described above. One of ordinary skill in the art will recognize that these panel fabrication steps may be included as initial steps of the method of the present invention.

At **100**, the method begins by applying the adhesive material **18** proximate a surface of at least one panel. For example, a bead of adhesive **18** may be applied proximate an interior surface of the inner and/or outer panels **12,14**. In the exemplary embodiment shown in FIG. **3**, a bead or daub of adhesive material **18** is disposed proximate an interior surface **20** of the outer panel **14**. Alternatively, the adhesive **18** may be disposed on another surface or another panel, such as the inner panel **12** in other embodiments of the present invention. Adhesive application may be accomplished manually or with automated or partially automated equipment. For instance, a manipulator, such as a robot **22**, may be employed that is equipped with a dispensing system **24**, such as that shown in FIG. **8** and disclosed in U.S. patent application Ser. No. 10/604,462, which is assigned to the assignee of the present invention and hereby incorporated by reference in its entirety.

At **102**, at least one panel is positioned in a desired location. In the exemplary embodiment shown in FIG. **4**, the inner panel **12** is positioned near the outer panel **14**. Moreover, the inner panel **12** may be positioned such that it does not contact the adhesive material **18** and/or the outer panel **14** in an area near which hemming operations will be performed to facilitate subsequent cleaning, coating, and/or phosphating operations as described in more detail below.

At **104**, the panels are hemmed together. In the exemplary embodiment shown in FIG. **5**, at least a portion of the outer panel **14** is hemmed around at least a portion of the inner panel **12**. Alternatively, at least a portion of the inner panel **12** could be hemmed around the outer panel **14** in various embodiments. The panels **12,14** may contact each other or may contact dimples **16** on an opposing panel during and/or after the hemming operation. Alternatively, the panels **12,14** may be spaced apart after hemming is complete to provide a gap to allow cleaning, coating, and/or phosphating of both sides of the panels **12,14** and hem flange area **26**. Optionally, fasteners such as rivets or clips may be used to join the inner panel **12** and the outer panel **14** together.

At **106**, a coating **28** may be applied to the panels. This step may include washing and cleaning operations that prepare one or more surfaces for coating application. In the exemplary embodiment shown in FIG. **6**, a coating **28** may be applied to external surfaces of the inner and outer panels **12,14**. The coating **28** may inhibit corrosion, provide tinting, and/or to protect the body panel assembly **10** or other coating layers from the environment. For instance, one or more coating layers may be applied by any suitable painting or coating process, such as electrocoating.

At **108**, heat is applied to at least partially melt the adhesive **18**. Heat may be provided by any suitable source, such as

4

heating or curing ovens employed with the coating process. In other embodiments, the heat source may not be associated with the coating process. The adhesive **18** may contact and/or bond to another surface, such as the inner panel **12** as shown in FIG. **7**, when heat is provided. Moreover, the adhesive **18** may remain attached to and cover its original application area or footprint **30**. As such, the adhesive **18** provides corrosion protection for localized areas, such as the footprint **30**, in which a coating layer is not applied. The adhesive **18** may help hold the panels together, provide corrosion protection, and/or provide cushioning or inhibit contact between the inner and outer panels **12,14** to reduce vibration and/or noise.

While the best mode for carrying out the invention has been described in detail, those familiar with the art to which this invention relates will recognize various alternative designs and embodiments for practicing the invention as defined by the following claims.

What is claimed is:

1. A method of manufacturing a body panel assembly for a vehicle, the method comprising:
 - providing first and second panels;
 - applying an adhesive to a surface of the first panel;
 - positioning the first and second panels proximate each other such that the adhesive faces toward but does not contact the second panel;
 - hemming the first and second panels together to form a subassembly such that the second panel does not contact the adhesive;
 - applying a coating to at least a portion of the subassembly; and
 - heating the subassembly to at least partially melt the adhesive such that the adhesive bonds to the first and second panels.
2. The method of claim **1** wherein the adhesive covers an adhesive application footprint after the subassembly is heated to inhibit corrosion of the first panel.
3. The method of claim **1** wherein the adhesive is applied with a robot having a dispensing system.
4. The method of claim **1** wherein the adhesive is an epoxy-based or rubber-based adhesive.
5. The method of claim **1** wherein the adhesive is an expandable adhesive.
6. The method of claim **1** wherein the adhesive is a non-expandable adhesive.
7. The method of claim **1** wherein the step of hemming the first and second panels together further comprises providing an open hem in which the first and second panels are spaced apart from each other.
8. The method of claim **1** wherein the second panel includes a dimple that spaces at least a portion of the first and second panels apart after the first and second panels are hemmed together.
9. The method of claim **8** wherein the dimple extends away from the adhesive when the subassembly is formed.
10. A method of manufacturing a closure panel assembly for a vehicle, the method comprising:
 - providing first and second panels having predetermined shapes;
 - applying an adhesive to a surface of the first panel to define a footprint;
 - positioning the first and second panels proximate each other such that the adhesive faces toward the second panel and second panel does not contact the adhesive;
 - hemming the first and second panels together to form a subassembly while the second panel does not contact the adhesive;